SOIL SURVEY OF LAMAR COUNTY ALABAMA.

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DESCRIPTION OF THE AREA.

Lamar County is located in the northwestern part of the State of Alabama, and the soils, crops, and agricultural practices found there

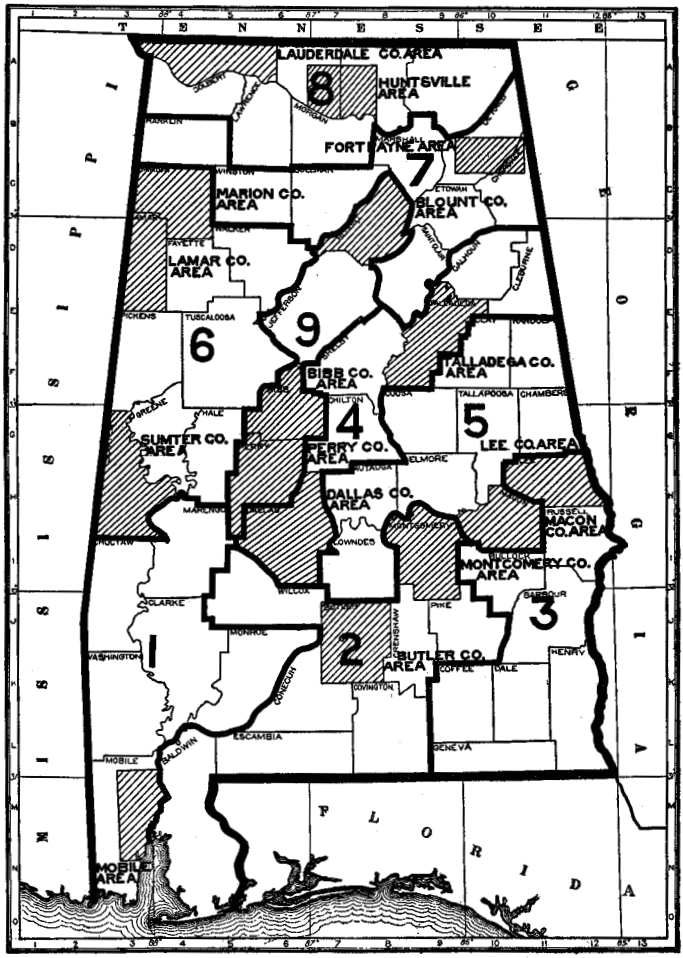

FIG. 10.—Sketch map showing location of the Lamar County area, Alabama.

are representative of a large part of the hill section of the State. Parallel 34° N. and meridian 88° W. pass through the area. The

county is regular in shape, being almost a rectangle. Its length north and south is 36 miles and its width across the south and north ends is 19 and 15 miles, respectively. It comprises an area of 391,232 acres, or about 611 square miles. It is bounded on the north by Marion County, on the east by Marion and Fayette counties, on the south by Pickens County, and on the west by Lowndes and Monroe counties, Miss.

The topography of the county varies from rolling to almost mountainous. The level areas are very limited in extent. In the eastern half of the county the topography is so rough and hilly that the country is poorly suited to agricultural purposes. In this section the ridges marking the divides between the major streams are from 250 to 300 feet above the water courses. The slopes to Hell, Yellow, and Beaver creeks in the eastern part of the county are so precipitous as to give the valleys of these streams a gorgelike appearance. This rough, hilly portion of the county has been so badly dissected by erosion that it now presents the appearance of a miniature mountain system, with numerous serrated ridges and cross ridges. In the central and western parts of the area, except between Luxapallila and Mud and between Mud and Yellow creeks, the hills are broader and more rounded, and a larger percentage of the country is cleared and farmed. The lowest point in the county is perhaps 200 feet above sea level, while the highest is about 600 feet.

The general course of the streams is to the southwest, into the Tombigbee River, and this determines to a great extent the configuration of the country. Luxapallila and Mud creeks in the southern part of the county, Yellow, Hell, Wilsons, Watson, and Cut Bank in the central, Buttahatchee River and Beaver Creek in the northern, and Sipsey Creek in the northwestern part are the principal streams of the area. These, with their numerous tributaries, furnish ample drainage for the uplands.

Most of the streams have built up rather broad bottoms, and these are generally swampy and uncleared. The movement of these streams is moderate to sluggish, and often no well-defined channel is apparent.

The present inhabitants of Lamar County are nearly all descendants of Georgia and South Carolina settlers, most of whom have come to this part of Alabama since the thirties. There has been a certain amount of emigration to the newer States of the Southwest. Very few of the early settlers were slave holders, and, as a result, the colored population of the area does not form more than 10 per cent of the total. The rough, broken character of the country and the distance from market caused settlement to be slow, and it has been only as a few families came from year to year that the present population has been built up. At present only 325,576 acres is reported

to be in farms, and of this 94,013 acres, or about 25 per cent of the area of the county, is reported to be improved land. The towns are all small, Sulligent and Millport each having a population of perhaps 600, and Vernon, the county seat, about 300. Kennedy, Fernbank, Melborne, Beaverton, and Crews are small railway towns, while Detroit represents a trading point for the settlements in northwestern Lamar and southwestern Marion counties.

The transportation facilities of the county are rather inadequate. The Southern Railway and the St. Louis and San Francisco furnish handy shipping points for the northern and southern parts of the county, but the farmers in the interior of the county have to haul their products 12 to 15 miles to reach a railroad. In the southwestern corner of the county considerable of the trade goes to Columbus, Miss.

The roads are such as might be expected in a hilly and undeveloped country. In order to avoid changes in topography they usually meander along the crests of the ridges or else follow the valleys. The sparseness of the population prevents the proper working of the roads, and as no machinery at all is used in their repair they often become quite bad during the winter season. The gravel beds which outcrop in the county furnish very good road-building material, but the distribution of these deposits is not such as to warrant their use in all parts of the county.

Birmingham and Memphis are the nearest large cities, the former being 100 miles east and the latter 150 miles northwest of the county. Most of the supplies used in the county are shipped from these points. Cotton is sold on the local markets and shipped to these or more distant cities.

CLIMATE.

The climatic conditions of Lamar County are favorable to general agriculture. The growing season of almost seven months' duration, together with the ample rainfall, makes possible not only a great diversity of crops, but also the production of several crops during one season. Little extreme heat is experienced, instances of the thermometer going above 95° being the exception rather than the rule. The mean temperature for the summer months is 80° F. and for the winter months 45°. The winters are short and mild, freezing temperatures seldom obtaining for more than twenty-four to forty-eight hours. The rivers never freeze and snow occurs on an average of perhaps twice a winter, and seldom remains on the ground for more than twenty-four to forty-eight hours. The rainfall is ample for large yields and is quite well distributed, although during the months of January, February, and March the rains often come in torrents, causing considerable damage in the uplands by erosion and in the bottom lands by overflow. On the other hand, droughts are

sometimes experienced in July and August, but the effects of these could be minimized by proper tillage and soil management. The spring opens about three weeks later than it does in central and south Alabama.

The appended table, compiled from the records of the Weather Bureau station at Tuscaloosa, gives the normal monthly, normal annual, and the absolute minimum and maximum temperature and precipitation.

Normal monthly, seasonal, and annual temperature and precipitation, etc., Tuscaloosa.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	Inches.	Inches.	Inches.	Inches.
December	46	75	9	4.8	1.1	4.0	0.2
January	44	78	11	5.6	4.1	3.6	Trace.
February	46	83	— 7	4.8	4.1	5.6	1.0
Winter	45			15.2	9.3	13.2	1.2
March	56	88	17	6.0	5.2	6.1	0.0
April	64	94	30	5.0	4.7	15.7	0.0
May	73	100	40	3.2	3.5	1.4	0.0
Spring	64			14.2	13.4	23.2	0.0
June	79	103	48	4.8	7.0	13.5	0.0
July	82	106	59	4.8	4.0	5.2	0.0
August	80	105	59	3.5	1.2	0.8	0.0
Summer	80			13.1	12.2	19.5	0.0
September	75	101	40	2.2	0.6	3.3	0.0
October	63	92	30	1.8	1.7	5.4	0.0
November	53	88	19	3.0	2.8	4.6	Trace.
Fall	64			7.0	5.1	13.3	Trace.
Year	63	106	— 7	49.5	40.0	69.2	1.2

The average date of last killing frost in spring is March 23 and of the first in the fall is November 6. Date of latest killing frost in spring April 9 and of earliest in fall October 21.

AGRICULTURE.

Lamar County was originally timbered with pine, hickory, and oak. These different trees were distributed in about the same proportions on all types of soil, except that more beech and gum were found in the bottom lands. The early settlers cleared only small tracts, and the agriculture that followed was somewhat primitive, but included a larger variety of crops than the system now in vogue. Only a small number of the early plantations were slaveholding, and none of them comprised extensive tracts, such as are found farther south.

As the country then was sparsely settled, the farms were usually far apart and each was more or less self-sustaining. The farmer and his family produced everything that was necessary to eat and wear. A few sheep were kept, and the wool that was not used in weaving the cloth for the family was sold with the other products of the farm. Wheat was the principal crop, although corn, oats, potatoes, and tobacco were grown for local use. As transportation facilities were entirely lacking, the few money products were hauled to Columbus or Aberdeen, Miss.

The first settlements were made either on the ridges or in the narrow valleys of the minor streams, where water was at hand. No attempt was made at first to cultivate the bottom and terrace areas, it being thought that they were too wet and swampy for profitable farming. Before the agricultural practices of the area had become very well fixed, however, it was found that by clearing the second bottoms and the bottoms of the smaller streams considerable tracts of good farming land could be obtained, and many settlements were made on these areas comparatively early in the history of the county. At present all the terrace areas are cleared and farmed and looked upon as the best farming lands of the county.

These general conditions prevailed up to the time of the civil war. Continuous cropping to wheat had reduced the yields of that crop, the rust and insects had become more destructive, and in general the profits on this staple had almost disappeared and its production was discontinued. About the time of the war the growing of cotton began. It grew well on the soils, and as it found a ready market it gradually took the place of wheat, until it became the dominant crop of the area. Cotton is now the sole money crop on all soils and all operations of the farm are made subordinate to those necessary in the production of this staple. The extension of railroads into the area has helped to furnish markets for this staple, and as the area of cultivated land has increased continuous cropping to cotton has been the type of agriculture adopted by all settlers.

Corn is next in importance, every farmer planting a portion of his land to it. However, many of them do not produce corn enough for their own consumption, and to supply this deficiency corn, usually of an inferior quality, is shipped from outside points at heavy cost to the consumer. Oats and cowpeas are minor crops, and as the latter do well the acreage planted to them should be increased. No hay is produced, and the roughage for stock consists of corn fodder, only the blades being used. Sugar cane is grown in the southern end of the county, and as the profits are usually large this crop should be more generally planted. No fruit is grown on a commercial scale,

and but few farmers in the county produce enough even to supply their own needs.

Continuous cropping to cotton reduced the yields, and in order to obtain larger yields some of the farmers cleared up new tracts of land, while others about twenty years ago began to use commercial fertilizers. It was found that the soils responded quite readily to the application of mineral plant food, and this practice, like the growing of cotton—good in itself—grew rapidly and was abused. Farmers began to depend too largely on fertilizers, and cultural methods, already insufficient, were further neglected. The fertilizers used have been almost entirely the high-grade "guanos" analyzing 10–2–2 or 8–2–2. No attempt has been made to maintain the productiveness of the soil by adding organic matter, and as a result fertilizers have come to be considered a necessity. According to the last census $24,210 was expended for commercial fertilizers by the farmers of the county in 1899.

The prevailing system of farming in Lamar County consists in the production of cotton and corn, much of the meat and other necessaries which might better be produced on the farm being purchased. With the dependence placed upon one crop and money coming in but once a year, the farmers are usually obliged to purchase supplies on credit, and thus pay a larger price than if they paid cash. They are also often obliged to market their cotton as soon as picked instead of taking advantage of market conditions.

At present agriculture in Lamar County is not as well developed as that of other sections of the State, but considerable advance has been made within the last ten years, and the practices now in vogue are of a more constructive nature than formerly. This improvement is due partly to the fact that better prices prevail and partly to the recognition that by farming more systematically and thoroughly much larger profits may be obtained. More and better implements are in use, such as disk harrows, weeders, stalk cutters, and two-horse plows. Business is on a firmer basis than formerly and more farmers are paying cash for their supplies. Property values are increasing slightly and this is an incentive to better methods of farming.

Very few cattle and hogs are kept and these are of mixed breeds. Formerly these ran at will through the woods, but now the stock laws prevent this to a certain extent. Very few sheep are seen. In general not enough pork is produced for home consumption, and seldom is there any surplus live-stock products for market. Mules are shipped in from other States, little attempt being made to raise them in this county. Oxen are used quite largely for hauling and to a less extent in farm work.

Terracing to prevent soil erosion was begun about twenty years ago and is now the general practice throughout the county. Terrace

lines are run, usually by the aid of a level, around the contour of the hills, and the cotton rows in ridges are filled in between and approximately parallel to these terraces. It is recognized that terracing pays, as it not only prevents erosion but serves to distribute the rainfall more uniformly in the soil. Some farmers lay out their terrace lines without the aid of an instrument, and as a result the best effects are not obtained. The terrace line is sure to be low at one or more points, and when heavy rains come the water collects here, breaks over, and a gully starts.

Terracing, while effective, has objections, chief of which is the difficulty of cultivating fields laid out in this way. Where the land is only slightly rolling erosion can be prevented by deeper plowing, the addition of organic matter, and the use of winter cover crops, and as this method leads to the improvement of the soil, as well as to greater ease of cultivation, it should be adopted where possible.

No systematic rotation of crops is practiced. In general cotton follows cotton until the yields fall so low that profitable results are not obtainable, even by the aid of fertilizers, when the fields are abandoned or else allowed to lie fallow for a few years. In the latter case the field is often left unprotected and the damage from erosion is so great that no attempt is made to reclaim it. Some farmers follow cotton with corn and a few plant cowpeas in the corn at the last plowing, and these are either gathered for hay or pastured, but this practice is the exception.

Not much consideration has as yet been given to the matter of adaptation of crops to soils, partly because there is not such a wide variety of soils presented as in some localities. It is generally recognized that the sandy uplands are better for cotton than for corn, while in the narrow stream bottoms the reverse of this seems to be true. The tendency of the cotton on the bottoms is to grow too rank, producing stalk at the expense of the boll, and it is frequently caught by the early frosts. The cotton on these areas is also more susceptible to rust. After several years of cropping to corn these bottom-land soils have their humus content reduced, and will then grow cotton if fertilizers are used, so that considerable cotton is at present produced on the low-lying areas. The areas of Orangeburg sandy loam seem to be peculiarly adapted to cotton. The second-bottom areas and the areas of Norfolk silt loam are moderately well adapted to cotton and somewhat better to corn than the sandy uplands.

The tillage methods are practically the same as those used in general in the hilly sections of the South, and are in many cases inadequate. A light one-horse plow, to which a variety of points may be attached, is used throughout the season. Most of the plowing is done to a depth of 3 or 4 inches. In the preparation of the seed bed the practice of ridging is much more common than broadcast

plowing. Sometimes, however, the ground is broken with the turning plow and thrown into ridges later. More often a series of furrows are run to open the ridges upon which the plants were grown the preceding year, and then commercial fertilizer, at the rate of 200 to 300 pounds an acre, is drilled in the furrows thus made. The soil is then turned back into its original position. Some farmers claim that by keeping the ridges in the same place in this manner fertilizers can be used more economically, as what is left by one crop is within reach of the succeeding one. Corn is usually drilled in rows about 4 feet apart, and cotton in rows about 3 feet apart. Both are drilled in with a single-row planter. Cultivation is accomplished by hoeing and by stirring the soil with single-shovel plows. The first step in the cultivation of the cotton is known as "barring off," or throwing the dirt away from the plants. This is followed by the hoeing, or "chopping," by which the plants are thinned to one stalk to every 10 or 12 inches.

The labor problem does not assume the importance in Lamar County that it does in regions where agriculture is carried on more extensively. However, during the last few years it has been more difficult than formerly to obtain help, as the laboring class, both white and colored, has sought employment in the sawmills or in the cities. The farms are usually small, the farmers not attempting, as a rule, to cultivate more than they can care for with the assistance of their own families. Most of the land is held in tracts of 160 acres or thereabouts, and of this not more than 30 or 40 acres are under cultivation. According to the census of 1900 only 25 per cent of the area is improved land.

About 60 per cent of the farms of the county are operated by their owners. Thus, the tenant system, so characteristically developed in other parts of the South, is not common in this area. There are practically no large holdings, although some landowners own a number of farms, but these are more likely to consist of a number of small farms rather than one continuous tract that is parceled out and worked by tenants. The rent paid by the tenants is usually "one-third" and "one-fourth;" that is, one-third of the corn and one-fourth of the cotton produced.

Not a large percentage of the farms operated by white owners is mortgaged. Chattel mortgages are very common, however. These are the result of a system of "advancing," which is generally admitted to be a serious handicap to the agricultural interests of the county. Practically all the farmers have to purchase on credit the supplies and tools necessary in production of their crops. To protect himself the merchant takes a mortgage on the farmer's personal property or his crop, and sometimes on both.

Almost no profitable system of farming can be carried on without a rotation of crops, for experiments and common experience show that there are very few soils, no matter how fertile, that will produce the same crop year after without a diminution in the yields, and a rotation of crops therefore becomes necessary. The standard rotation recommended by the State experiment station would probably be as well as any for Lamar County and is as follows: First year, cotton; second year, corn, with cowpeas sown at the last plowing; third year, oats, followed by cowpeas; fourth year, cotton again. If the crop of peas following the corn is turned under to a considerable depth in the fall, better results will be obtained than if they are cut for hay or pastured, as more organic matter or humus will be added to the soil, as well as the nitrogen that has been gathered from the air by these plants. However, if fall plowing is practiced, it will be necessary to protect the soil during the winter with a crop of rye or vetch or a mixture of these two. As all the soils are subject to more or less washing and leaching during the winter months in this latitude, it is recommended that a cover crop be grown after all crops, and plowed under as early as possible in the spring. All the soils of the area are deficient in organic matter, and this rotation will tend to supply this important constituent, and also nitrogen, which is usually added in the form of expensive cotton-seed meal. Good results will also be obtained from applications of mineral fertilizers.

The home mixing of fertilizers has been found advantageous and can be recommended for Lamar County. The results obtained on the experimental plots of the agricultural school at Hamilton, in the adjoining county, indicate that of the three constituents, nitrogen, phosphoric acid, and potash, nitrogen and phosphoric acid are the more essential. A combination of acid phosphate and cotton-seed meal is the best mixture for supplying these substances. It was pointed out that the rotation recommended would gradually remove the need of cotton-seed meal, so that this expensive ingredient can be gradually eliminated as humus is incorporated into the soil. Rock phosphate is beginning to be used in small amounts, and while this is the cheapest form in which to obtain phosphates, it will give little result the first year, unless used with barnyard or green manure. Where live stock is kept, composting, or the mixing of fertilizers with barnyard manure, trash, etc., should be practiced. Numerous reliable fertilizer formulas are given in the bulletins of the Georgia experiment station, and these publications may be obtained free upon request.

As already pointed out, the plowing is usually only 3 or 4 inches deep. This is generally too shallow to give the best results. The plows are so light that green crops, trash, stalks, etc., can not be effectively turned into the soil. Many of the farmers of the area have plowed to the same depth for so long that a well-defined plow

sole, impervious to water and plant roots, has been formed by the pressure of the plow upon the base of the furrow. This can easily be corrected by deeper plowing and varying the depth of the furrow from year to year. There is a more or less general prejudice against deep plowing, many of the farmers claiming that it injures the land. Opposed to this is the experience of some of the best farmers of the county who have practiced deep plowing, using care and judgment not to deepen the seed bed too suddenly or to stir the heavier subsoil when it is too wet.

While the general inadaptability of the soils of the county to corn production is unfavorable to the extensive development of live-stock interests, more and better live stock should be kept than at present. Stock should be confined to pastures on the farm instead of being allowed to range at will through the woods.

In connection with the raising of more live stock more grass crops for pasturage and for hay would have to be introduced. Alfalfa can probably be grown with the aid of lime and inoculation, as can several other forage crops, such as crimson clover, vetch, lespedeza, etc. There appears to be no good perennial grass that can be grown for hay except Johnson grass, but the difficulty of eradicating this plant in the cotton and corn fields makes the general introduction of it open to question. Hay can best be produced by the mixing of the various annual forage crops, two crops of which can be very easily grown in one season. Oats and vetch, followed by cowpeas, or by cowpeas and sorghum, furnish good hay. Excellent pastures may be obtained from Bermuda grass, although it does not grow large enough to cut for hay.

SOILS.

Lamar County does not present a wide diversity of soils, by far the greater percentage of them being fine sandy loams in texture; but little coarse or medium sand is found upon the uplands, and only a limited amount of clay.

The soils of Lamar County fall into two general divisions—the upland sedimentary soils and the terrace and alluvial or bottom-land soils. Of the former there are eight types and of the latter three. The sedimentary Coastal Plain soils were derived from deposits which were laid down under conditions somewhat different from those existing farther from the boundary line between the Tertiary and the Carboniferous periods, and the types are, therefore, less uniform than where the formations are less variable in their composition. For this reason most of the types could not be correlated with the established series, and those that were correlated varied somewhat from the true type.

The upland soils are all sedimentary in origin. Three geological formations are exposed, and these give rise to the various soil types of the area. They are the Tuscaloosa of the Cretaceous, the Columbia loam of the Quaternary, and the Lafayette of the Tertiary period. The Lafayette and the Tuscaloosa are made up of unconsolidated beds of sands and clays and pebbles. The Tuscaloosa is the formation which underlies all of the area, and owing to the great amount of erosion that has taken place since the final recession of the waters of the Gulf, the overlying Lafayette has been partly and in places entirely removed. The materials which go to make up these two formations are so similar that absolute identification is impossible. It is probable that the heavy material in the western part of the county which gives rise to the Susquehanna fine sandy loam is entirely Tuscaloosa, while the areas mapped as Orangeburg sandy loam in the eastern part of the county, and occupying the crests of the highest ridges, are entirely Lafayette, but the great majority of the surface materials of the county are composed of a mingling of the two. The Columbia loam formation, which is more extensively developed farther to the west in Mississippi, is exposed in only limited areas in Lamar County, the most extensive of which are near Millport or near the southwestern corner of the county. The material which makes up this formation consists of yellow loam or silt loam. It does not occur at as great elevations as do the Lafayette and Tuscaloosa, has not been subjected to as great an amount of erosion, and is, therefore, more nearly level in topography.

Lamar County lies near the southwestern border of the Cumberland plateau, the old shore line passing approximately parallel to the east county line and about 15 miles to the east of it. The sandstone formations of the plateau are exposed in the northeast corner of the county, where they form the bluffs of the Buttahatchee River for about 1½ miles after it enters the county. They dip slightly to the southwest, and probably underlie the whole area, though they are not exposed, except in the one place mentioned. Owing to this dip the nearer the plateau is approached the greater is the elevation above sea level and the greater the erosion; consequently the eastern part of the county has been so badly dissected by erosion that it now presents a rugged, almost mountainous appearance.

The Coastal Plain materials laid down along the margins were subjected to varying influences during the period of deposition, and because of this the soil-forming material varies widely. In many places thick beds of gravel were formed, while at other points, presumably representing quiet bays, fine material was deposited, resulting in the formation of loams and fine sandy loams. Some of the gravel beds were cemented with iron, forming a conglomerate, while at other

points the iron compounds acted as a cement between the sand grains, forming a brown, highly ferruginous, and moderately hard sandstone. Farther out the deposition was more uniform, giving rise to the interbedded sands and clays characteristic of the Gulf Coastal Plain. At considerable distance from the old shore line, that is, in the central and western parts of the county, erosion has been less active, and, although all the original surface features have been dissected by erosion, this portion of the county does not present the rough appearance that the eastern section does. Iron crusts occur less frequently, and gravel seams, though present in places, are usually too small to exert any influence upon the surface.

The conditions described have given rise to twelve types of soils. The Guin fine sandy loam is the most extensive type and is predominant throughout the western half of the area. Closely associated with it are the other Guin types. These soils all have the same origin—that is, the Lafayette and Tuscaloosa formations—and as the differences that exist are due to differences that obtained at the time of deposition and to differences in erosion, these four types are naturally quite closely related, and no sharp line of demarcation exists between them, so that the boundary lines as shown are often little more than approximations. The original material of the Lafayette, as mentioned already, consists of red and yellow sands, clay, and loam, with here and there beds and lenses of gravel. The various processes of weathering have altered the surface of these deposits into the present materials. The drainage waters passing over and through this loam and sandy clay material have removed in suspension much of the finer clay particles from the surface, leaving a fine to medium sandy soil. The subsoil for the most part is much like the material of the original beds. Where these weathering processes have formed a surface fine sandy material from 6 to 18 inches deep, the type is classed as Guin fine sandy loam. On the steep slopes of the narrow valleys to the east of Vernon, where erosion and leaching have been more effective, the surface material is more sandy and of greater depth. This soil was mapped as the Guin sandy loam. It will be seen that these types vary with the degree of erosion, and thus the fine sandy loam has a deeper and a more sandy surface on the steeper slopes near the larger streams. Where protected from erosion the sandy loam type naturally assumes the characteristics of the fine sandy loam.

During the processes of weathering some of the iron salts disseminated throughout the deposits were dissolved and, percolating downward, were precipitated. These acted as a cement, forming iron crusts or conglomerates varying in size from a few inches to several feet in diameter. More of this stony material has accumulated on the steep areas, and when sufficiently plentiful to render the soil unfit for

agricultural purposes the soil is classed as the Guin stony sandy loam. This type is confined almost entirely to the hilly eastern portion of the county. As a result of the outcropping of the beds and seams of gravel and also as a result of the removal in such places of the finer soil particles, we find on the steeper slopes next the larger streams of the eastern part of the county a soil to which the name Guin gravelly sandy loam has been given. It is nowhere extensive and is agriculturally unimportant.

Closely associated with the preceding soils is the Orangeburg sandy loam. It is derived from the Lafayette, and the principal difference between it and the Guin fine sandy loam is in the color of the subsoil. The Norfolk silt loam owes its origin to the weathering in place of the Columbia loam material. The Norfolk fine sandy loam is derived in part from the Columbia loam and in part from the Lafayette and Tuscaloosa materials. The Susquehanna fine sandy loam is derived from the weathering of the heavy clay areas in the western part of the county, which probably belong to the Tuscaloosa.

Since the final recession of the Gulf waters the active erosion of the streams has resulted in the formation of terraces and bottom-land areas along their courses. This has given rise to three types of soil—the Norfolk loam, which exists as terrace areas along the major streams, and the Waverly loam and the Ocklocknee loam, found in the bottoms. The former includes the white swampy soils and the latter the higher lying and better drained areas. All these alluvial soils are composed of materials of Quaternary age, the terraces being Pleistocene and the bottoms Recent.

The following table gives the names and areas of the several soil types shown on the accompanying map:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Guin fine sandy loam	131,776	33.7	Norfolk fine sandy loam	10,560	2.7
Guin stony sandy loam	83,520	21.3	Guin sandy loam	10,112	2.6
Ocklocknee loam	49,152	12.6	Orangeburg sandy loam	9,920	2.5
Waverly loam	41,344	10.6	Norfolk loam	6,784	1.7
Guin gravelly sandy loam	19,264	4.9	Rough stony land	640	.2
Susquehanna fine sandy loam	14,912	3.8			
Norfolk silt loam	13,248	3.4	Total	391,232	

GUIN FINE SANDY LOAM.

The soil of the Guin fine sandy loam consists of a light-brown to gray fine sandy loam or sandy loam 10 to 24 inches deep. The surface, to a depth of 6 or 8 inches, when in the virgin state, is light

brown in color, but owing to methods of cultivation, open texture of the soil, and rapid oxidation in this latitude, the color bleaches to gray or almost white when cultivation has been practiced for a few years. The subsoil is quite variable, as it includes almost every combination of the red and the yellow sandy clay or clay. As a rule no one color or texture extends over any considerable area, but these characteristics bear little relation to topography or position.

This type is somewhat anomalous, and is, in a way, intermediate between the well-established Orangeburg and Norfolk series, typical borings of each of these series frequently being obtained in the Guin fine sandy loam.

At irregular intervals iron crusts and beds of gravel are found in both the surface and subsoil, and where these are of sufficient prominence to warrant a separate classification they have been mapped as either the Guin stony sandy loam or as the Guin gravelly sandy loam.

The Guin fine sandy loam is the most extensive type of the county and is found quite generally distributed, although the largest areas occur in the western half of the county.

The original surface of this soil has been modified by erosion, and the streams have cut deep valleys, so that the present topography varies from heavily rolling to rough and hilly. North of the Buttahatchee River the ridges between the stream courses are narrow and not well suited to agriculture. In the valley of Sipsey Creek, around Sulligent, and west and northwest of Vernon, the hills are lower and more rounded, and therefore better for agricultural purposes. The areas of this type south of Luxapallila Creek are steeply rolling, but can be used for farming.

This soil is derived from the weathering of the sandy clay and loams of the Lafayette and Tuscaloosa formations. The silt and clay particles have been removed by the leaching of the original surface loam material. This process has played an important part in the development of the soil, as on the steeper slopes, where leaching has been more active, the surface sandy material is deeper. Where the vegetation has been removed, erosion has tended in some places to remove the surface material, thus bringing the clayey subsoil nearer the surface. To the west of Vernon this soil has probably been derived from the blending of the materials of the Lafayette, Tuscaloosa, and Yellow Loam formation, for small areas of Susquehanna fine sandy loam and of Norfolk silt loam are found through it.

The native vegetation of this type consisted of oak, hickory, and shortleaf pine. The forests varied from scrubby to moderately heavy growths. At present the only crops grown on this soil are cotton and corn, with an occasional crop of oats. The yields vary considerably, according to the methods of farming, the quantity and quality of fertilizers used, and the length of time the soil has been

under cultivation. Probably 15 bushels of corn and one-third bale of cotton per acre are average yields for the type.

Rotation of cotton, corn, and cowpeas, deeper plowing, and a more rational and conservative use of fertilizers will lead to larger yields and profits on this soil. Where the sandy surface material is not over 10 inches in depth it is recommended that the depth of plowing be gradually increased until small amounts of the heavier material are mixed with the surface soil. This will render the surface more loamy, more retentive of moisture and fertilizers, and will tend to prevent the rapid oxidation of the humus.

Most of this type can be bought for $5 to $15 an acre, depending upon the state of buildings and other improvements, and the nearness to towns and railroads.

The following table gives the average results of the mechanical analyses of the soil and subsoil of the Guin fine sandy loam:

Mechanical analyses of Guin fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18437, 18439.....	Soil	0.0	1.9	9.6	42.3	13.6	25.8	6.7
18438, 18440.....	Subsoil.....	.2	1.0	7.4	33.4	11.7	25.7	20.7

GUIN SANDY LOAM.

The surface sandy material of the Guin sandy loam varies in texture from a fine sand to a sand and occasionally to a sandy loam. It varies in depth from 15 to 36 inches. Owing to the open structure of the surface soil it contains little humus, and is, therefore, gray to almost white in color. The subsoil is a red to yellow sandy clay, practically the same as that of the Guin fine sandy loam. Bands of gravel occur frequently, and iron crusts are sometimes present.

This soil occurs almost entirely east of Vernon, and occupies the steep slopes of the narrow valleys between the several prongs of Hell and Yellow creeks. The ridges between these valleys are occupied by Norfolk silt loam, Guin fine sandy loam, or by Guin stony sandy loam.

The Guin sandy loam is derived from the same source as the Guin fine sandy loam, with which it is closely associated, the difference between these two types of soil having been brought about by erosion and leaching. The steep topography has caused the finer particles of the original loams and sandy clays to be carried away, leaving the sands as a residue to form the present surface.

The original timber growth on this type consisted of a mixture of the pines and hardwoods, and practically the entire area has been

left in forest, although the larger trees have been removed to some extent by the lumber companies. When cleared the most of this type erodes quite badly, and the yields are low. Owing to the depth and loose, open nature of the soil it apparently does not retain fertilizers and manures. It is believed that the best use that can be made of this soil is systematic forestry. It is not well suited for general farming, and if seeded to grass it is so sandy that the turf would soon be injured by grazing.

The following table gives the results of the mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Guin sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18435	Soil	0.0	9.9	25.7	29.0	4.6	23.2	6.8
18436	Subsoil	.0	7.7	20.4	25.0	3.9	26.2	17.0

GUIN STONY SANDY LOAM.

The interstitial materials of the soil and subsoil of the Guin stony sandy loam are practically the same as those forming the Guin fine sandy loam, the stony type being separated from the latter on account of its content of iron crusts and its rough, hilly topography. These iron sandstones are not fragments of a bed rock, as is usually the case with a stony loam, but are formed here and there throughout the deposits as the result of a cementing of the sands and gravel by iron compounds. The fragments are irregular and vary from a few inches to several feet in diameter.

This type is most extensively developed in the eastern part of the county, where, being nearer the contact of the Coastal Plain with the Cumberland Plateau, the original surface has a somewhat higher elevation, and erosion has been more active and destructive than where the elevations were lower. A large area of the soil occurs to the southwest of Vernon and northwest of Fernbank, between Luxapallila and Mud and between Mud and Yellow creeks. This development is probably due to the close proximity of the streams to each other and the more complete dissecting of the interstream areas. The last-named areas of the type are not so rough and hilly as are those on both sides of Beaver Creek, in the northeastern part of the county, which are almost mountainous. As this type is for the most part in a wild and timbered state, and as it is naturally closely related to the Guin fine sandy loam, the boundary lines between these two types are little more than approximations.

The Guin stony sandy loam has been formed from the erosion and weathering of the Lafayette and Tuscaloosa materials. On the steep slopes the sand is usually deeper than on the hilltops. The stony material is usually most plentiful on the crests of the higher and narrower ridges, which owe their existence to the protection thus afforded from erosion.

As already mentioned, the topography of this soil is hilly to mountainous and too steep for cultivation. If it were cleared of its timber, erosion would be very destructive. At present only the occasional broad hilltops are cultivated, and frequently on these the stones have to be removed before cultivation is practical. The forests on this soil are composed of the same species of trees as on the Guin fine sandy loam, although they are usually more scrubby and of lower commercial value. It is believed that the best disposition that can be made of this land is to leave it in forest. The rocky hillsides could probably be used for grapes, but the present lack of markets prevents the extension of this industry.

Large tracts of this soil can be bought for $1 to $5 an acre. Considerable areas are held at present by lumber companies.

SUSQUEHANNA FINE SANDY LOAM.

The soil of the Susquehanna fine sandy loam is a fine to very fine sandy loam, 4 to 12 inches deep. The color is usually light brown to gray, as is the case with Guin fine sandy loam. The subsoil is a red to dull red heavy, waxy clay, and is usually mottled with gray below 24 inches. In the latter case the texture usually becomes heavier with depth. Sometimes, however, the texture is slightly lighter below 24 inches, and no mottlings are seen. Where exposed in road cuts the clay presents a variety of colors at depths of 4 to 6 feet.

Where the subsoil comes near enough to the surface to be reached by the plow, this type is refractory and difficult to cultivate. Where the subsoil material is found in the roads, they become almost impassable, owing to the waxy, tenacious character of the clay. The exposed clay upon drying cracks into irregular cubes, giving rise to the local term "joint clay."

The Susquehanna fine sandy loam is of limited development in Lamar County. The largest areas are found in the western part along the state line, and along the Military road. A few areas are found in various other parts of the county, and throughout the Guin fine sandy loam small outcroppings of this heavy clay are seen, which if sufficiently extensive would give rise to Susquehanna clay. The topographic features are practically the same as those of the Guin fine sandy loam, into which the soil passes gradually. Level or undulating areas rarely occur. Owing to the character of the sub-

soil and to the steep topography, the rain water does not enter the subsoil, and in times of drought the crops suffer.

It is probable that the clay beds that give rise to this soil are derived from the Tuscaloosa formation of the Cretaceous period, the overlying Lafayette mantle having been removed by erosion.

The original forest growth on this type was pine and scrub oak. Most of the pine of commercial value has been removed, but the scrub oaks and smaller pines remain. Probably not over one-tenth of the area of this soil is under cultivation.

Cotton and corn are the only crops produced, and the yields are frequently too small to pay the cost of production. Fair yields are obtained sometimes, if at the time the seed bed is prepared the moisture conditions are just right, and if during the growing season there is sufficient rainfall, but the farmers complain that the soil is likely to be either too wet or too dry for cultivation, and it is for this reason a difficult soil to handle properly.

It is probable that by using deeper and more thorough cultivation, and by a systematic rotation of crops that will add organic matter to the soil, the yields could be increased considerably, but the wisdom of cultivating this soil, especially the phase that has the subsoil near the surface, will be questionable as long as areas of Norfolk silt loam, Guin fine sandy loam, and like types can be obtained at the prevailing prices. This type can be bought for $1 to $5 an acre.

The following table gives the results of mechanical analyses of the soil and subsoil of the Susquehanna fine sandy loam:

Mechanical analyses of Susquehanna fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18449	Soil	0.0	0.9	0.4	55.2	15.2	18.5	9.6
18450	Subsoil	.4	1.0	.7	20.0	14.1	20.4	43.0

OCKLOCKNEE LOAM.

The soil of the Ocklocknee loam consists of a friable silt loam 10 to 15 inches deep, light to dark brown in color when wet, but becoming somewhat ashy when dry. The soil grades into a gray or gray and yellow mottled silt loam or loam subsoil. The type is found along the higher lying, better drained areas of the large bottoms, and occupies the narrow basin-shaped or valleylike bottom lands of the smaller streams. Usually where the bottoms are more than a quarter of a mile wide, and the slope from stream channel to the base of the hill is slight, poorly drained areas result, and the soil assumes the nature of the Waverly loam. The transition from one type to the

other is gradual. As the heads of the valley are reached the soil becomes quite variable. Here it occupies a strip about 40 rods wide or less, and is partly colluvial in origin, receiving wash from the adjacent uplands. Borings of silt loam, loam, and even sandy loam, in varying combinations as to soil and subsoil may be obtained. The most recent deposits by the streamlets from the adjacent hills are known locally as "made land," while the higher lying portions are referred to as "hillside bottoms." In areas where the soil is inclined to be wet and "crawfishy," it is a common practice to turn the small lateral streams so that they will deposit their load of sand over various parts of the field to be cultivated, and as this material is worked into the soil by plowing and subsequent processes of cultivation the result is usually found to be quite beneficial.

In the early settlement of the county it was found that small areas of this soil when cleared were inclined to "fall," that is, as the roots of the trees, shrubs, etc., decayed they sank and became so poorly drained as to be worthless. However, as the bottom land was cleared and more material from the hills was washed in and better drainage provided by the deepening and straightening of the stream channels, the soil became more productive. The successful management of this soil is now so generally understood that good crops are obtained within a year or two after clearing.

This is the best corn soil of the area, and at the present high price of corn it should be planted as largely as possible in that crop. When planted in cotton, the tendency of the plant is to make excessive stalk growth at the expense of the boll. This tendency may be checked in several ways: by liming the soil, by clipping the terminal buds to encourage fruiting, or by using large applications of phosphate, increasing the depth of the seed bed as more fertilizer is used. No cotton-seed meal should be used on areas where stalk is excessive, as this is likely to aggravate this condition.

The natural drainage of this soil is inclined to be poor, but owing to its slightly sloping surface it can usually be effectively drained by artificial means, such as cleaning and straightening the stream channel and by ditching. The area of this soil mapped just east of Henson's Springs in the Buttahatchee botttoms is moderately well drained and all cleared and farmed.

The native timber growth on the Ocklocknee loam consisted of gum, poplar, beech, hickory, and an occasional loblolly pine. Most of this has been removed and that standing should be cut and the land planted to corn.

The crops grown on this soil are cotton, corn, and sugar cane. It is a good general farming soil, and if thoroughly drained almost any crop can be grown on it. In the southern part of the county it is frequently planted to sugar cane. The narrower areas, even those

that are too narrow to be mapped, are the best for this crop. The sirup is mainly used for home consumption, but any surplus that may be produced finds a ready local market. Cotton yields from one-third to 1 bale, and corn from 20 to 30 bushels per acre.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Ocklocknee loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Veryfine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18433	Soil	0.8	8.6	17.9	17.9	4.5	25.9	6.4
18434	Subsoil	.8	11.0	20.3	21.5	4.4	19.7	27.0

WAVERLY LOAM.

The soil of the Waverly loam consists of 8 to 10 inches of white to light-brown silt loam or loam, or, more rarely, fine sandy loam carrying sufficient fine material to cause it to bake or clod if plowed when wet. The subsoil is a white silt to clayey silt, usually marked with yellow mottlings below 24 inches. The degree of mottling is influenced greatly by drainage conditions, and, therefore, is an index to the agricultural value of the soil. When the drainage is poor and the soil in a saturated condition the greater part of the time, the mottling is less marked or frequently lacking, while in the better drained areas it increases till yellow is the predominating color. The surface soil here has a darker color. Where this condition is extensively developed it gives rise to the Ocklocknee loam.

The Waverly loam is found in the wider bottoms of the major streams of the county. Its topography is flat, except where broken occasionally by old channels or stream bayous. Its natural drainage is poor, and as the stream channels are very crooked, and usually clogged with driftwood, the soil is usually in a saturated condition.

The Waverly loam is derived from alluvial deposits, having been laid down gradually in times of the oft-repeated overflows. The material composing this soil has been washed from the adjacent uplands, and is, therefore, reworked Lafayette and Tuscaloosa.

The forest growth on this soil consists of beech, gum, oak, elm, cypress, and loblolly pine, much of which is still standing. Where cleared and farmed frequent open ditches are necessary to remove the surplus water. The clearings are usually of limited extent and scattered and there are no adequate outlets for the drainage water. The soil is apt to remain in a water-logged condition and to give poor yields. If larger areas were cleared, that is, the bottom along a stream for several miles, the main channel cleaned and perhaps straightened, and the numerous ditches turned into this channel,

the danger from floods would be lessened, and the abnormal conditions now existing in the soil would be overcome. As the soil is farmed it will be necessary to add lime and coarse organic matter. It is somewhat doubtful if the expense incurred in making such improvements would be justified at the present time.

Waverly loam is known locally as "swamp," "flats," or "crawfish land." Very little of it is under cultivation and hence any estimate of the yields is impracticable.

The following table gives the average results of mechanical analyses of the Waverly loam:

Mechanical analyses of Waverly loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18453, 18455	Soil	0.1	2.3	6.5	17.3	15.1	36.7	21.7
18454, 18456	Subsoil.....	.1	4.5	7.1	14.8	14.1	37.1	21.4

NORFOLK LOAM.

The soil of the Norfolk loam consists of a light-brown to yellowish-brown loam, more or less silty in character and 8 to 10 inches in depth. In some places the texture is decidedly that of a silt loam, while in others the soil contains a larger quantity of medium sand. The subsoil, into which the surface soil passes gradually, is more frequently a loam than a silt loam and is usually mottled with gray below 24 inches.

This type occupies only small areas in the county, but because of its productiveness it is of considerable importance. The principal areas of it are found along Buttahatchee River in the northern part and along Luxapallila Creek in the southern end of the county. Smaller areas are found along Yellow and Sipsey creeks in the central and northwestern parts, respectively. It occurs as second bottom or bench areas along the streams at elevations of from 5 to 15 feet above the level of the regular flood plains. Its topography is level except where cut by a few small streams. Occasional poorly drained and whitish areas are found. In these the soil is acid and the growth of crops is likely to be poor. In addition to draining these areas and giving them an occasional deep fall plowing the application of lime would doubtless prove beneficial.

This soil represents alluvial deposit laid down at a time when the streams occupied higher levels than at present. It is derived from reworked Lafayette material.

The areas of the Norfolk loam along Yellow Creek in the western part of the county and along Sipsey Creek in the northwestern part

have no well-defined terrace lines, the surface being slightly sloping and the soil grading by degrees into the Ocklocknee loam or the Waverly loam.

The original forest growth on this soil was shortleaf and loblolly pine, oak, hickory, and beech. In its natural condition the type was too wet for profitable cultivation, but by clearing, draining, and tilling it has become one of the most desirable farming soils of the area, and is now practically all under cultivation. Its level topography adds much to its value as farming land. The ridge method of cultivation is usually practiced, but it is believed that level cultivation would give better results wherever the drainage conditions are good. An occasional deep plowing in the fall would be beneficial, and as the soil has a tendency to pack the surface should be stirred just as soon as possible after rains throughout the growing season to prevent the formation of a crust. Fertilizers are quite generally used on this type, as it has for the most part been under cultivation for a long time. It responds readily to fertilizers, and is seldom allowed to lie fallow. Some areas contain relatively large quantities of humus, and on these cotton is inclined to produce stalk at the expense of boll. In such cases less cotton-seed meal and more phosphate should be used. Most of this type is valued at about $25 an acre.

The following table gives the average results of mechanical analyses of the soil and subsoil of the Norfolk loam:

Mechanical analyses of Norfolk loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18441, 18443.....	Soil	0.1	2.2	5.9	21.0	12.3	48.8	9.5
18442, 18444.....	Subsoil.....	.1	1.7	4.6	19.2	14.3	44.7	15.2

NORFOLK SILT LOAM.

The soil of the Norfolk silt loam consists of a yellowish-gray silty loam, with an average depth of 7 inches. The particles composing the soil range from very fine sand to silt. The soil is friable and has a peculiar mealy feel. The subsoil is composed more largely of silt, and has, therefore, a greater coherence, though below 24 inches it also is in many cases friable and mealy. The color of the subsoil varies somewhat with the topography and drainage. Where the drainage is good the yellow color continues to a depth of 36 inches, but in poorly drained areas gray mottlings begin to appear at from 18 to 24 inches, and increase with depth. In extreme cases the gray may be the predominating color of the subsoil.

The principal areas of the Norfolk silt loam are found in the southern and southwestern parts of the county, although several areas occur west of Vernon. It occupies level, plateaulike areas at elevations intermediate between those of the Norfolk loam and the Guin fine sandy loam. The topography is level to undulating, the surface being only slightly eroded by gullies and streams. The drainage of this soil is not always sufficient, and better crops could be secured in many cases if artificial drainage, either by open or tile drains, were provided.

The Norfolk silt loam is derived from the Yellow Loam formation, which is more extensively developed in Mississippi. Erosion has played very little part in the weathering of this formation into soil.

The original forest growth on the Norfolk silt loam consisted mainly of pine and oak, although some black gum, persimmon, and sassafras occurred. This is considered one of the best soils of the area. Corn does very well, yielding on the average about 20 bushels per acre. Cotton produces from one-third to three-fourths bale per acre. Cowpeas are well suited to this soil, and one crop should be plowed under to a good depth in the fall every two or three years. This, with deep plowing, will generally prevent the running together or packing of the soil and also break up the plow sole that is found about 6 inches below the surface in most fields. A crust usually forms on the surface after the soil has been saturated, and the cultivator should be run to pulverize the surface as soon as possible after rains during the growing season. Contouring and terracing are not necessary on this soil and are seldom practiced. The ridge method of cultivation is used by some, but, except on the poorly drained areas, level cultivation will probably give better results.

The yields on this soil do not decline as rapidly as on the sandier hill soils, but commercial fertilizers are quite generally used. Their use in connection with green or barnyard manures and under a system of crop rotation would give larger profits. On the poorly drained areas lime would be beneficial, but it must not be supposed that it will take the place of drainage.

The following table gives the results of mechanical analyses of the soil and subsoil of the Norfolk silt loam:

Mechanical analyses of Norfolk silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
17523	Soil	0.6	2.6	4.2	10.5	6.9	65.3	9.6
17524	Subsoil	.9	2.3	2.4	6.4	3.8	57.2	26.8

ORANGEBURG SANDY LOAM.

The soil of the Orangeburg sandy loam consists of a fine sandy loam or loam 6 to 10 inches deep. The surface material is principally fine sand, but frequently contains enough silt and medium sand to give it the texture of a loam rather than fine sandy loam. The color of the soil varies from brown to reddish brown and more rarely to gray. As a rule, the surface material carries more humus than the other upland types.

The subsoil is uniformly a brick-red sandy clay, containing an appreciable percentage of silt. For a distance of 6 to 15 inches below the surface soil the material is heavier than below this depth.

The Orangeburg sandy loam occupies limited areas in Lamar County, and is, therefore, unimportant. It is found widely scattered and closely associated with the Guin fine sandy loam. Isolated areas occur in the southern part of the county, northeast of Vernon, and around Sulligent.

The surface varies from rolling to hilly. Occupying as it does the rather flat and undulating ridge tops, erosion, although active, has not as yet greatly modified the surface. The drainage is good and the texture is such that favorable moisture conditions can be maintained by proper management. Terraces are used to prevent erosion.

Around Kennedy and near Holcomb's schoolhouse there are areas that have a nearly level surface and a reddish-brown surface soil, and are very productive. The areas near Blooming Grove church and to the east of Vernon occupy high, rolling ridge tops, and here the soil is subjected to considerable erosion.

The Orangeburg sandy loam is derived from the weathering of the sandy clays of the Lafayette mantle. The difference between the soil and subsoil has been caused mainly by the removal of the finer particles of the former in the drainage waters, which action has varied with the topography.

This type is the best upland soil of the area and is at present all cleared and farmed. It is more productive than adjoining soils which have lighter colored subsoils. The original timber consisted of a somewhat luxuriant growth of pine, oak, and hickory. Cotton is the principal crop at present, and the soil seems to be particularly well adapted to this staple, producing with careful cultivation 1 bale per acre. Fertilizers are generally used and the soil responds readily to moderate applications. Fertilizers apparently have more lasting effects on this soil than on the lighter colored types with deeper sandy surface soils, and for this reason are more profitably used. It is a soil capable of improvement, and the same general recommendations that were made for the Guin fine sandy loam are applicable to this type. Fall plowing has been found to give good results where the

land was not too rolling. If this is done the soil should be protected with a cover crop during the winter to prevent erosion. The practice of bedding the land into ridges, so generally followed on this type, is open to question, and careful experiments should be made to see whether or not this is more profitable than level cultivation.

The value of the type ranges from $5 to $35 an acre.

The following table gives the results of the mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Orangeburg sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18447	Soil	0.3	15.5	18.5	30.4	2.7	25.9	6.4
18448	Subsoil	.3	11.6	15.1	21.1	4.9	19.7	27.0

NORFOLK FINE SANDY LOAM.

The soil of the Norfolk fine sandy loam consists of a light-brown to gray, occasionally yellowish-gray, fine sandy to very fine sandy loam 8 to 15 inches deep. The subsoil varies from a silt loam to light sandy clay. Below 30 inches the color often becomes light yellow or even mottled gray. In the more rolling areas the color varies from tan to pale orange.

Of limited development in Lamar County, the largest area is found southeast of Millport. A few others are found in the central and northern parts of the county. The Millport area resembles the Norfolk silt loam; the others are more closely associated with the Guin fine sandy loam, and merge gradually into this and other types.

In general the topography varies from rolling to hilly, though it is not so hilly as the Guin fine sandy loam. Most of it requires terracing to prevent erosion. The area southeast of Millport occupies a somewhat dissected table-land, the crests of the ridges being at a lower level than those of the regular uplands. Other areas occupy broad and rather flat ridge tops or else the lower slopes and valley-like country along the streams.

The area of Norfolk fine sandy loam southeast of Millport owes its origin to the erosion and carrying away of the finer particles of the Yellow Loam formation. The other areas are derived from the materials of the Lafayette and Tuscaloosa.

Originally this soil was covered with the same character of timber as the Guin fine sandy loam, but this has been quite largely removed. Cotton yields about one-half bale and corn 15 to 20 bushels per acre.

The following table gives the results of mechanical analyses of the soil and subsoil of the Norfolk fine sandy loam:

Mechanical analyses of Norfolk fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
18445	Soil	0.0	4.6	12.2	22.1	7.8	44.6	8.4
18446	Subsoil	.2	2.5	11.6	17.1	8.9	40.5	18.7

GUIN GRAVELLY SANDY LOAM.

The soil of the Guin gravelly sandy loam consists of loose, open, gravelly sandy material from 8 to 12 inches deep. The subsoil is frequently a red or yellow sandy clay containing 25 to 50 per cent of gravel. Often, however, the percentage of gravel is greater than this, and there is little clayey material, the interstices being filled with fine sand to sand.

The topography of the soil is usually steep and surface drainage rapid, while owing to its loose, open structure the movement of the soil water is free. On the steeper slopes the soil consists of beds of almost pure gravel, the land being of no agricultural value whatever. As the distance from the major streams increases the topography becomes more gentle, and the soil assumes gradually the characteristics of the Guin fine sandy loam. Included with this soil are a few areas in which erosion has removed the sandy material and left the gravel resting upon a stiff waxy clay, similar to that which forms the subsoil of the Susquehanna clay.

Both waterworn pebbles and angular or subangular stone fragments are found in this soil. They vary from the size of a pea to pieces 2 inches or more in diameter. The waterworn gravel is composed mainly of quartz and jasper, and the angular to subangular fragments of chert.

Areas of the Guin gravelly sandy loam occupy the steeper slopes near to the major streams in the eastern part of the county. They are derived from the outcropping of gravel beds, although in some cases the gravel, originally distributed to a greater or less extent throughout the formation, has accumulated on the slopes as the finer particles have been removed by erosion.

The material forming this soil is Lafayette and Tuscaloosa. As the distance from the old shore line increases—that is, as we go west in this county—the beds of gravel decrease in size and the percentage of gravel disseminated through the deposits is generally less. In places along Yellow Creek above Vernon, and along Luxapallila Creek above Kennedy, the gravel is cemented by the iron compounds,

forming masses of conglomerate often several feet in diameter. In various parts of the county narrow strips of this gravel are found on the slopes, and occasionally on the tops of ridges. These were in many cases too small to be indicated on a map of the scale used in this survey.

The Guin gravelly sandy loam is nearly covered with forests of oak and pine. Its area is small and its agricultural value low. It has little influence on the agriculture of the county.

ROUGH STONY LAND.

Two areas of Rough stony land occur in Lamar County. They are of very limited extent and are found on the bluffs along the Buttahatchee River where it enters the county. They are due to the outcropping of the massive sandstones of the Carboniferous period, which formation is supposed to underlie the deposits throughout the county.

SUMMARY.

Lamar County, lying in northwest Alabama, comprises an area of 391,232 acres, or about 611 square miles. The surface features vary from heavily rolling to rough and broken. The eastern half is made up of a series of sawtooth ridges, and is poorly suited to agriculture, while the western half is not so rough and has a larger percentage of its area under cultivation. The drainage and general slope of the country are toward the southeast.

The climate is favorable to agriculture, both on account of a long growing season and abundant rainfall.

The county is sparsely settled. Vernon is the most important town and the county seat. There are a number of smaller villages along the railroads. The topography of the county is such that agriculture will have to be developed along intensive lines upon small holdings.

Cotton is the main crop, and all operations of the farm hinge on the production of this staple. A little corn is grown on almost every farm. Fenced pastures are practically unknown. Almost all of the farms are small, usually containing about 160 acres, but frequently not more than 15 to 25 acres are cultivated. No hay is produced, and the forage consists chiefly of corn fodder, only the blades being saved.

Little stock is kept and many other necessaries that could well be produced on the farm are purchased.

Shallow cultivation is the rule, and one-horse implements are used. The use of commercial fertilizers at the rate of 200 to 300 pounds per acre is general. Contour cultivation and terracing are employed to prevent erosion.

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Little land is rented and little labor hired, most of the farms being operated by the owners and their families.

Eleven types of soil, not including Rough stony land, which type is of no importance, were encountered. Eight of these types belong to the hilly uplands and are derived principally from the Lafayette and Tuscaloosa formations. The remaining three are alluvial and terrace soils, derived from more recent sediments.

Of the upland soils, the Guin fine sandy loam, which is an intermediate type between the Orangeburg fine sandy loam and the Norfolk fine sandy loam, is the most extensive. The surface is heavily rolling to rough and hilly. Cotton yields from one-third to one-half bale. Land of this character is valued at from $2 to $15 an acre. Closely associated with this type are the Guin sandy loam and the Guin stony sandy loam, which types are found in the rugged eastern portion of the county, and are of little value agriculturally. The Guin gravelly sandy loam occupies only narrow strips on the slopes, and exerts little influence on the agriculture of the county.

The Orangeburg sandy loam consists of a few scattered areas. It is the best cotton soil of the county, yielding one-third to 1 bale per acre. It seems to be less well adapted to the production of corn.

The Norfolk fine sandy loam has a gray surface soil and yellow sandy to fine sandy clay subsoil, and occupies only a few small areas. Its crop value is about the same as that of the Guin fine sandy loam.

The Norfolk silt loam occupies flat plateaulike areas, and because of this favorable topography it is a desirable farming soil.

The Susquehanna fine sandy loam is found mostly in the western edge of the county. Its distinguishing characteristic is its red to mottled, heavy, waxy clay subsoil. It is not well suited to general crops, and when the refractory subsoil comes near the surface it is difficult to cultivate.

Of the alluvial soils, the Norfolk loam, or second bottom type, is the most desirable and the most important. It does not occupy large areas, but all of it is under cultivation, and quite well suited to general crops.

The Ocklocknee loam ranks next in importance, and occupying as it does the higher lying, better drained parts of the first bottoms of the major streams, and the valleylike bottoms of the small streams, it is usually better suited to the production of corn than cotton, and should be devoted to this crop more largely.

The Waverly loam occupies the whitish swampy bottoms that are timbered and subject to overflow. It has little value at present, and can be improved only by the aid of expensive drainage systems.

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U. S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF

SOIL MAP
ALABAMA
LAMAR COUNTY SHEET

STATE OF ALABAMA
B. B. COMER, GOVERNOR.
J. A. WILKINSON, COMMISSIONER
OF AGRICULTURE AND INDUSTRIES

SOIL PROFILE
(3 feet deep)

Guin stony sandy loam: Sl, Sc

Guin gravelly sandy loam: Gl, Sc

Guin sandy loam: Sl, Sc

Guin fine sandy loam: Fsl, Sc

Norfolk fine sandy loam: Fsl, Fsl

Norfolk loam: L, L

Norfolk silt loam: Sil, Sil, Sic

Orangeburg sandy loam: Sl, Sc

Susquehanna fine sandy loam: Fsl, Cl, C

Ocklocknee loam: Sil, L

Waverly loam: L, Sil

LEGEND
Fsl Fine sandy loam
Sc Sandy clay
Sl Sandy loam
Gl Gravelly loam
Cl Clay loam
C Clay
Sil Silt loam
Sic Silty clay
L Loam

LEGEND

Gs — Guin stony sandy loam

Gg — Guin gravelly sandy loam

Gl — Guin sandy loam

G — Guin fine sandy loam

Nsl — Norfolk fine sandy loam

Nl — Norfolk loam

Ns — Norfolk silt loam

Os — Orangeburg sandy loam

S — Susquehanna fine sandy loam

Ol — Ocklocknee loam

W — Waverly loam

Rs — Rough stony land

Soils Surveyed by
E. R. Allen, assisted by W. L. Lett of the
Alabama Department of Agriculture and Industries

BASE MAP IN COOPERATION
WITH THE U. S. GEOLOGICAL SURVEY

JULIUS BIEN & CO. LITH. N.Y.

Scale 1 inch = 1 mile

Field Operations
Bureau of Soils
1908.